

In the Claims:

Please amend the claims as follows:

1. (currently amended) A method for controlling a robot in an application comprising a plurality of robots (~~33a-n~~) carrying out an operation on one or more work objects (~~39~~) in a common workspace, wherein instructions for a plurality of movements are recorded in a program controlling said robot, ~~characterised by~~ the method comprising:

controlling said robot dependent upon whether said robot or any other robot in the common workspace is proceeding as predetermined, according to a sensed or measured common reference value (~~43', 64, 74~~), or not,

checking (~~42, 61, 71~~) a value for a common reference for said robot before the start of the next task, and

providing a signal (~~47, 47b, 62, 72~~) to said robot to stop and wait (~~43, 64, 74~~) at the end of the present task if the common reference value is not within acceptable limits.

2. (currently amended) A The method according to claim 1, ~~characterised by~~ further comprising:

determining said plurality of movements as a plurality of tasks,

checking (~~42, 61~~) a value for a position reference for said robot before the start of the next task, and

providing a signal to said robot to stop and wait (~~44b, 64~~) at the end of the present task if the position reference value is not within acceptable limits.

3. (currently amended) A The method according to ~~any of claims 1-2~~, characterised by claim 1, further comprising:

checking (~~44b, 71~~) a reference value (~~64~~) or other operational status for at least one other robot of said plurality of robots (~~33a-n~~), and

providing a signal to stop and wait (~~74~~) at the end of the present task if at least one other robot has a status of waiting or stopped.

4. (currently amended) A The method according to claim 3, ~~characterised by~~ further comprising:

determining the value of the position reference for the first said robot by:

sampling an output of a sensor member (~~92~~) arranged for measuring a position of a target located on one of said one or more work objects,

comparing the measured position of the target to a predetermined target position, and

registering, if the measured target position is not within acceptable limits, the status of the position reference as not acceptable.

5. (currently amended) A The method according to claim 4, ~~characterised in that~~ further comprising:

recording the target position on the work object ~~is recorded~~ for the beginning of each task in said plurality of movements recorded in said program and saved in an array or other memory storage.

6. (currently amended) ~~A~~ The method according to claim 5, ~~characterised by further~~  
comprising:

adjusting, by means of a program editing application, the target position of the work object after the first recording dependent on a manual comparison.

7. (currently amended) ~~A~~ The method according to claim 6, ~~characterised by further~~  
comprising:

adjusting, by means of a program editing application, the target position of the work object after the first recording dependent on a graphical comparison carried out using the program editing application.

8. (currently amended) ~~A~~ The method according to claim 1, ~~characterised by further~~  
comprising:

setting an indicator for a common reference in a program for any of said robot of said plurality of robots to a status of not acceptable or flag high (~~44b, 64, 74~~) which such common reference indicator status is detectable by other controllers or robot controllers.

9. (currently amended) ~~A~~ The method according to ~~any of claims 1-3, characterised by~~  
claim 1, further comprising:

setting an indicator in a program for first said robot to a status of not acceptable or flag high, which such indicator status is detectable by other controllers or robot controllers.

10. (currently amended) ~~A~~ The method according to ~~claim 8 or 9, characterised by claim~~

8, further comprising:

re-setting the indicator in a program or the program for first said robot and thus removing the not acceptable status.

11. (currently amended) A The method according to ~~claim 8 or 9, characterised by claim~~

8, further comprising:

re-setting the indicator in a program or the program for first said robot from not acceptable to acceptable, which such indicator status is detectable by other controllers or robot controllers.

12. (currently amended) A The method according to claim 1, ~~characterised in that the~~

further comprising:

basing the common reference ~~is based~~ on any of the list of: movement of a transport member of a work object, a time period, a time stamp, a measure of task completion, a measure of job completion.

13. (currently amended) A The method according to ~~any of claims 1-4, characterised in~~

~~that~~ claim 1, further comprising:

checking the position reference value for the first robot ~~is checked~~ at a time just before the first robot shall proceed to a subsequent task.

14. (currently amended) A The method according to claim 13, ~~characterised in that~~

further comprising:

checking a reference value (64, 74) for the any of said plurality of robots is checked according to a configured time value dependent on a Movement Program (21, 85) for the first robot.

15. (currently amended) A The method according claim 14, ~~characterised in that~~ further comprising:

checking the reference value (64, 74) for the any of said plurality of robots is checked according to a configured time value of the Movement Program for the first robot dependent on a task or movement carried out by any other one of said plurality of robots (33a-n).

16. (currently amended) A The method according to claim 4, ~~characterised in that~~ wherein the measured position of said target is a current position.

17. (currently amended) A The method according to claim 4, ~~characterised in that~~ wherein the measured position of said target is, in part, a calculated position.

18. (currently amended) A The method according to claim 1, ~~characterised by~~ further comprising:

a robot controller determining that the common reference value measured or sensed (92, 93) is lower than the stored value, and making the robot wait until the reference value is larger than or equal to the stored reference before continuing.

19. (currently amended) A The method according to claim 1, ~~characterised by~~ further

comprising:

a robot controller determining that the common reference value measured or sensed (92, 93) is higher than the stored reference value, sending a signal to the external reference controller and/or time keeper that a robot so controlled is late and the conveyor should be halted or the time reference stopped until the robot has caught up and attained an acceptable reference value.

20. (currently amended) A The method according to ~~any previous claim, characterised in that~~ claim 1, wherein the acceptable values for the reference value comprise a pre-set window with configurable tolerance limits.

21. (currently amended) A control device (81) for controlling a robot in an application comprising a plurality of robots, operating on one or more work objects in a common workspace, ~~characterised in that~~ said control device (81) ~~comprises~~ comprising:

a program member (85, 85a) for determining or detecting a value for a common reference (43) for said robot before the start of the next task,

a logic member (85) for making, if the measured target position is not acceptable, a decision that the robot shall stop and wait, and

an output member (82) arranged capable to provide a signal to said robot comprising an instruction to wait, and a program member (86) for determining or detecting a value for a position reference (64) for said robot before the start of the next task.

22. (currently amended) A The control device according to claim 21, ~~characterised by~~ further comprising:

a program member (87) for determining or detecting a value of a reference (74) for at least one other robot of said plurality of robots (33a-n), before the start of the next task.

23. (currently amended) A The control device according to claim 21, ~~characterised by~~ further comprising:

a processor member (83).

24. (currently amended) A The control device according to claim 21, ~~characterised by~~ further comprising:

at least one memory storage member (84, 89).

25. (currently amended) A The control device according to claim 21, ~~characterised by~~ further comprising:

one or more software members (86, 87, 85, 85a) for carrying out the steps of a method according to any of claims 1-20

controlling said robot dependent upon whether said robot or any other robot in the common workspace is proceeding as predetermined, according to a sensed or measured common reference value, or not,

checking a value for a common reference for said robot before the start of the next task,  
and

providing a signal to said robot to stop and wait at the end of the present task if the common reference value is not within acceptable limits.

26. (currently amended) ~~A~~ The control device according to claim 25, ~~characterised in that wherein~~ at least one of the one or more software members is arranged to check a time reference value for any of the one or more robots.

27. (currently amended) ~~A~~ The control device according to claim 25, ~~characterised in that that wherein~~ at least one of the one or more software members is stored at least in part in the memory storage member of a control device.

28. (currently amended) ~~A~~ The control device according to claim 27, ~~characterised in that wherein~~ at least one of the one or more software members (~~85a, 86, 87~~) is stored, at least in part, in a memory storage means of a cell controller (~~31~~) or other robot control system.

29. (currently amended) ~~A~~ The control device according to ~~any of claims 21-28,~~ characterised by claim 21, further comprising:

an I/O interface for wireless communication with at least one sensor and/or member of at least one robot.

30. (currently amended) A control system for controlling one or more robots in an application comprising a plurality of robots operating on one or more work objects in a common workspace, comprising a computer or processor and memory storage means, and one or more robot controllers (~~81~~), ~~characterised by the control system~~ comprising:

at least one robot controller (~~81~~) arranged capable to check a reference value (~~43, 64, 74~~) for any of said plurality of robots (~~33a-n~~), ~~comprising~~



a program member (85, 85a) for determining or detecting a value for a common reference (43) for said robot before the start of the next task,

a logic member (85) for making, if the measured target position is not acceptable, a decision that the robot shall stop and wait,

an output member (82) arranged capable to provide a signal to said robot comprising an instruction to wait, and

a program member (86) for determining or detecting a value for a position reference (64) for said robot before the start of the next task.

31. (currently amended) A The control system according to claim 30, ~~characterised in that wherein~~ the system is arranged with sensor members (92) to measure a position (41) of the one or more work objects and/or transport members for said work objects and/or a clock of time sensor (93) to measure elapsed time relative the one or more work objects and/or transport members for said work objects.

32. (currently amended) A The control system according to claim 31, ~~characterised in that wherein~~ the sensor members are arranged to provide a measurement of the position of a work object that at least one of said plurality of robots shall operate on at the start of a task in a operating cycle or robot movement program (21).

33. (currently amended) A The control system according to claim 32, ~~characterised by~~ further comprising:

a graphical user interface arranged to display and carry out actions in respect of at least

one robot controller (~~81~~) or cell controller (~~31~~) controlling said plurality of robots by means of a movement program (~~21, 85, 85a~~) including tasks comprising one or more movements.

34. (currently amended) A The control system according to claim 30, ~~characterised in that~~ wherein a control member of the at least one robot controller is arranged to check a time reference value for at least one of said plurality of robots.

35. (currently amended) A computer program product, comprising:  
a computer readable medium; and  
computer code means and/or software code portions recorded on the computer readable medium for making a computer or processor perform any of the steps of ~~claims 1-19~~  
controlling said robot dependent upon whether said robot or any other robot in the common workspace is proceeding as predetermined, according to a sensed or measured common reference value, or not,  
checking a value for a common reference for said robot before the start of the next task,  
and  
providing a signal to said robot to stop and wait at the end of the present task if the common reference value is not within acceptable limits.

36. (cancelled)

37. (cancelled)

38. (currently amended) Use of a control device according to ~~any of claims 21-29~~ claim 21 for a operating a robot together with at least one other robot or in an application to paint any of the list of: car bodies, car parts, vehicle sub-systems.

39. (currently amended) Use of a control device according to ~~any of claims 21-29~~ claim 21 for a operating a robot or automation application (1) to carry out an operation comprising any from the list of: coating, welding, riveting, gluing, fettling, folding plate, cutting, bending plate, hemming plate, gripping an object, manipulating an object, stacking, pick and place.

40. (currently amended) Use of a control device according to ~~any of claims 30-34~~ claim 21 for a operating a robot or automation application (1) in an industrial or commercial installation including any installation for mining, chemical manufacturing or processing, power generation or transmission and distribution, oil or gas exploration, oil refining.

41. (currently amended) Use of a control device according to ~~any of claims 30-34~~ claim 21 for teaching and/or programming and/or verifying a program for at least one robot in an application comprising a plurality of robots (~~33a-n~~) for carrying out an operation on one or more work objects in a common workspace to carry out an operation comprising any from the list of: painting, coating, welding, riveting, gluing, fettling, cutting, folding plate, bending plate, hemming plate, gripping an object, manipulating an object, stacking, pick and place.